

FEB 09 2007

Serial No. 10/523,844
67222-001AMENDMENTIN THE CLAIMS:

1. (CURRENTLY AMENDED) A wafer rotating device to rotate a disk-shaped wafer having a top surface, a bottom surface and a circumferential surface, the wafer rotating device comprising:

at least three rollers rotatably provided about axes arranged at parallel intervals and disposed to clamp the wafer, wherein each of the ~~at least three rollers~~ has a cylindrical surface ~~which contacts the circumferential surface of the wafer~~;

a rotation drive mechanism arranged to rotate and drive that rotates and drives at least one of the rollers, wherein the cylindrical surfaces of the rollers contact only the circumferential surface of the wafer without contacting the top surface and the bottom surface of the wafer when the rotation drive mechanism is activated to rotate the wafer;

a load cell disposed to detect a contact load between the cylindrical surfaces of the rollers and the circumferential surface of the wafer;

an interval adjustment mechanism operatively connected to the rollers to adjusteapable-of adjusting dimensions of the intervals of the rollers so that only the circumferential surface of the wafer is supported by a frictional force that is proportional to the contact load and so that the wafer is stably held at a position in a direction of height of at least one of the cylindrical surfaces while balancing gravity and the frictional force; and

a load control device that controls the interval adjustment mechanism so that the contact load detected by the load cell is maintained constanta load applied from the rollers to the wafer in a radial direction of the wafer when the wafer is clamped between the rollers; and

~~a load cell provided in the interval adjustment mechanism that detects the load applied to the rollers along a direction of movement of the rollers, wherein the load cell detects a contact load between the cylindrical surfaces of the rollers and the circumferential surface of the wafer when the wafer is clamped between the rollers~~;

~~wherein the load control device controls the interval adjustment mechanism so that the contact load detected by the load cell is maintained constant~~;

~~wherein the interval adjustment mechanism adjusts the dimensions of the intervals of the rollers so that only the circumferential surface of the wafer is supported by a frictional force that is proportional to the contact load and so that the wafer is stably held at a position in a direction of~~

Serial No. 10/523,844
67222-001

~~height of at least one of the cylindrical surfaces while balancing gravity and the frictional force, and~~

~~wherein the rotation drive mechanism rotates and drives at least one of the rollers to rotate the wafer without making any contact with the top surface and the bottom surface.~~

2. (CANCELLED)

3. (PREVIOUSLY PRESENTED) The wafer rotating device according to claim 1 wherein the rollers are rotatably provided around the axes which are arranged roughly in a vertical direction, and the rollers include a flange section, wherein the flange section has a diameter larger than the cylindrical surface of the rollers, and the flange section is provided below the cylindrical surface which clamps the wafer, and the flange section has an inclined surface in which an upper surface of the flange section gradually becomes lower moving towards an outside in a radial direction.

4. (PREVIOUSLY PRESENTED) The wafer rotating device according to claim 1 wherein an angle between two of the rollers adjacent to one of the rollers and on both sides of the one of the rollers is smaller than 180°.

5. (PREVIOUSLY PRESENTED) The wafer rotating device according to claim 4 wherein pairs of rollers are arranged at three or more locations at intervals in a circumferential direction of the wafer.

NOT AVAILABLE COPY

Serial No. 10/523,844
67222-001

6. (CURRENTLY AMENDED) An edge flaw inspection device comprising:
- a wafer rotating device which rotates a disk-shaped wafer having a top surface, a bottom surface and a circumferential surface, the wafer rotating device including:
- at least three rollers rotatably provided about axes arranged at parallel intervals and disposed to clamp the wafer, wherein each of the ~~at least three~~ rollers has a cylindrical surface ~~which contacts the circumferential surface of the wafer~~,
 - a rotation drive mechanism arranged to rotate and drive that rotates and drives at least one of the rollers, wherein the cylindrical surfaces of the rollers contact only the circumferential surface of the wafer without contacting the top surface and the bottom surface of the wafer when the rotation drive mechanism is activated to rotate the wafer;
 - a load cell disposed to detect a contact load between the cylindrical surfaces of the rollers and the circumferential surface of the wafer,
 - an interval adjustment mechanism operatively connected to the rollers to ~~adjustable~~ of adjusting dimensions of the intervals of the rollers so that only the circumferential surface of the wafer is supported by a frictional force that is proportional to the contact load and so that the wafer is stably held at a position in a direction of height of at least one of the cylindrical surfaces while balancing gravity and the frictional force,
 - a load control device that controls the interval adjustment mechanism so that the contact load ~~contact load detected by the load cell is maintained constant~~ ~~a load applied from the rollers to the wafer in a radial direction of the wafer when the wafer is clamped between the rollers,~~
 - ~~a load cell provided in the interval adjustment mechanism that detects the load applied to the rollers along a direction of movement of the rollers, wherein the load cell detects a contact load between the cylindrical surfaces of the rollers and the circumferential surface of the wafer when the wafer is clamped between the rollers,~~
 - a light source that radiates light onto the circumferential surface of the wafer supported by the wafer rotating device; and
 - a light detector that detects the light that has been radiated from the light source which is reflected on the circumferential surface of the wafer;
 - ~~wherein the load control device controls the interval adjustment mechanism so that the contact load detected by the load cell is maintained constant,~~

Serial No. 10/523,844
67222-001

~~wherein the interval adjustment mechanism adjusts the dimensions of the intervals of the rollers so that only the circumferential surface of the wafer is supported by a frictional force that is proportional to the contact load and so that the wafer is stably held at a position in a direction of height of at least one of the cylindrical surfaces while balancing gravity and the frictional force, and~~
~~wherein the rotation drive mechanism rotates and drives at least one of the rollers to rotate the wafer without making any contact with the top surface and the bottom surface.~~

7-8. (CANCELLED)

9. (NEW) The wafer rotating device according to claim 1 wherein the at least three rollers comprise eight rollers.

10. (NEW) The wafer rotating device according to claim 9 further including four brackets, wherein two of the eight rollers are supported on each of the four brackets.

BEST AVAILABLE COPY